

PRELIMINARY AMENDMENT

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (Currently amended) An optical device comprising:  
  
a substantially planar first layer of a first material, the first layer being formed with a pattern of one or more shaped elements,  
  
~~the or each of the one or more~~ shaped elements and/or the pattern having no line of symmetry within the plane of the layer,  
  
such that an optical signal incident on the device is reflected and/or transmitted and/or diffracted by the device, and at least one of the polarisation state, intensity ~~and~~ or phase of the optical signal is changed as a result of its interaction with the device.
2. (Currently amended) A device as claimed in claim\_1, wherein the device further comprises a substrate second layer of a second material having different electromagnetic properties to the first material, the substrate second layer supporting the layer of the first material.
3. (Currently amended) A device as claimed in claim 1, ~~claims 1 or 2~~, wherein the first layer is formed with a pattern comprising a plurality of shaped elements.
4. (Currently amended) A device as claimed in ~~any preceding~~ claim 1, wherein ~~the or each of the one or more~~ shaped elements is a chiral shaped element, ~~such as a gamma, a~~

PRELIMINARY AMENDMENT

~~gammatta, a gammadion, an anti-gammadion, an S-shape, a spiral, a triskella, a chiral split ring, or a bi-layered chiral shaped element.~~

5. (Currently amended) A device as claimed in claim 3, wherein the shaped elements are non-chiral shaped elements, ~~such as a cross having equal length arms,~~ the shaped elements being arranged in a pattern having planar chirality.

6. (Currently amended) A device as claimed in ~~any preceding~~ claim 2, wherein the or each shaped element comprises either a solid shape formed in the substrate second layer, or ~~comprises a hole formed in the~~ substrate second layer.

7. (Currently amended) A device as claimed in ~~any preceding~~ claim 1, wherein the first layer comprises a layer selected from the group consisting of metal, ~~a layer of a~~ semiconductor material, ~~a layer of a~~ catalytic material, ~~a layer of a~~ dielectric material, ~~a layer of~~ an amorphous material, and ~~or a layer of a~~ glassy material.

8. (Currently amended) A device as claimed in ~~any preceding~~ claim 1, wherein the first material ~~is~~ has a property selected from the group consisting of ferromagnetic, ferroelectric, piezoelectric, electro-optic, magneto-optic, photo-acoustic or electro-acoustic to thereby allow at least one of the polarisation state, intensity, phase or direction of the transmitted, reflected and/or diffracted light to be changed.

9. (Currently amended) A device as claimed in ~~any preceding~~ claim 1, wherein the substrate second layer ~~of a second material~~ comprises ~~a layer of a~~ crystalline material or ~~a layer of a~~ semiconductor material.

**PRELIMINARY AMENDMENT**

10. (Currently amended) A device as claimed in ~~any preceding~~ claim 2, wherein the optical device further comprises a third layer selected from the group consisting of ~~in the form of~~ ~~a layer of~~ an electrically insulating material, a dielectric material, a piezoelectric material, a ferromagnetic material or a ferroelectric material, the third layer being provided between the substrate second layer and the first layer, or on top of the first layer.

11. (Currently amended) A device as claimed in ~~any preceding~~ claim 1, wherein the optical device further comprises a layer of a surrounding material provided on top of the first layer, the surrounding layer extending into and substantially filling any holes present in the first layer.

12. (Currently amended) A device as claimed in ~~any preceding~~ claim 11, wherein one or more of the first material, the second material, the material of the third layer or ~~and~~ the surrounding material has planar chirality.

13. (Currently amended) A device as claimed in ~~any preceding~~ claim 11, wherein one or more of the first material, the second material, the material of the third layer or ~~and~~ the surrounding material contains particles, quasi-particles or excitations, ~~such as plasmons, surface plasmon polaritons, electrons, excitons or polaritons.~~

14. (Currently amended) A device as claimed in ~~any preceding~~ claim 1, wherein the optical device further includes a tunnel junction, ~~such as a Josephson tunnel junction, a semiconductor tunnel junction, a Schottky tunnel junction or a metal/oxide/semiconductor tunnel junction,~~ within a shaped element or between shaped elements.

PRELIMINARY AMENDMENT

15. (Currently amended) A device as claimed in ~~any preceding~~ claim 1, wherein the device comprises a plurality of substantially planar layers with a pattern of one or more shaped elements.

16. (Cancelled) ~~An optical device substantially as described above with reference to the accompanying drawings.~~

17. (New) A device as claimed in claim 4, wherein the chiral shaped element is selected from the group consisting of a gamma, a gammatta, a gammadion, an anti-gammadion, an S-shape, a spiral, a triskella, a chiral split-ring, and a bi-layered chiral shaped element.

18. (New) A device as claimed in claim 5, wherein the non-chiral shaped elements comprise a cross having equal length arms.

19. (New) A device as claimed in claim 13, wherein the particles, quasi-particles, or excitations are selected from the group consisting of plasmons, surface plasmon-polaritons, electrons, excitons and polaritons.

20. (New) A device as claimed in claim 14, wherein the tunnel junction is selected from the group consisting of a Josephson tunnel junction, a semiconductor tunnel junction, a Schottky tunnel junction, and a metal/oxide/semiconductor tunnel junction.